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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,241	05/30/2001	Akira Arai	9319A-000220	8821

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HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. BOX 828  
BLOOMFIELD HILLS, MI 48303

EXAMINER

SHEEHAN, JOHN P

ART UNIT	PAPER NUMBER
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1742

18

DATE MAILED: 06/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No. 09/870,241		Applicant(s) ARAI ET AL.	
Examiner John P. Sheehan		Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 May 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 10 and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 13-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                          | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>17</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 30, 2003 has been entered.

### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

3. The information disclosure statement filed June 2, 2003 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of the Korean Office Action relating to Korean Patent Application No. 2001-0030146 that is not in the English language. All

of the other references cited in this information disclosure statement have been considered by the Examiner.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Toshio et al. (Toshio, Japanese Patent Document No. 09-271909, cited by the applicants in the IDS submitted January 14, 2003).

Toshio teaches a specific example of a cooling roll having a width of 30 microns and a pitch (interval) of 16 microns (See the English language translation submitted by the applicants, paragraph 0015, line 8). Toshio does not explicitly disclose the ratio of the area of the grooves to the total area of the cooling roll, however the Examiner considers that the ratio of the groove width to the sum of the groove width and groove pitch is equivalent to the ratio of the area of the grooves to the total area of the cooling roll. Based on Toshio's example;

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{30}{16+30} = 0.65 \text{ or } 65\%$$

Thus, this example teaches a groove width of 30 microns and a ratio of the grooves to the total area of the cooling roll of 65% which are encompassed by applicants' claim 1,

which recites a groove width of 0.5 to 90 microns and a ratio of the groove area to the total area of the cooling roll encompassed by the instant claims value of 30 to 99.5%.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 3 and 5 to 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshio as applied to claim 1 above, and further in view of Fukuno et al. (Fukuno, US Patent No. 5,665,177).

Toshio teaches a cooling roll for manufacturing a ribbon shaped metal alloy material wherein the cooling roll has a grooved surface. Toshio teaches that the grooves are 0.1 to 50 microns wide and have a depth of about 10 microns or more. Toshio teaches that the groove width of 0.1 to 50 microns is such that the molten metal does not enter the groove (paragraph 0013, line 1 of the English language translation submitted by the applicants). Toshio teaches a groove pitch (interval) of 200 microns or less (paragraph 0014, line 4). Again, Toshio does not explicitly disclose the ratio of the area of the grooves to the total area of the cooling roll, however the Examiner considers that the ratio of the groove width to the sum of the groove width and groove pitch is equivalent to the ratio of the area of the grooves to the total area of the cooling roll. Taking a sampling of groove widths and groove pitches taught by Toshio:

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Groove Width = 50 microns

Groove Pitch = 10, 60, 80, 100 and 200 microns

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+10} = 0.83 \text{ or } 83\%$$

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+60} = 0.45 \text{ or } 45\%$$

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+80} = 0.38 \text{ or } 38\%$$

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+100} = 0.33 \text{ or } 33\%$$

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+200} = 0.20 \text{ or } 20\%$$

Thus, Toshio teaches ratios of the area of the grooves to the total area of the cooling roll that overlap the ratio of the area of the grooves to the total area of the cooling roll of 30 to 99.5% recited in applicants' claims.

Fukuno teaches a cooling roll for manufacturing a ribbon shaped metal alloy material wherein the cooling roll has a grooved surface. Fukuno teaches that to minimize variation in the crystal size of the product, that is, to make a more uniform product, the cooling roll is preferably comprised of a base and a surface layer (column 6, lines 65 to 67). Fukuno teaches that the outer surface layer on the cooling roll should have a thermal conductivity lower than the thermal conductivity of the cooling roll base (column 7, lines 1 to 7) as recited in applicants' claim 3. Fukuno teaches a thermal

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conductivity of the cooling roll outer surface that overlaps applicants' claim 5 (column 7, lines 3 to 6). Fukuno teaches a cooling roll surface layer having a thickness of 10 to 100 microns (column 7, lines 18 to 20).

The claims and Toshio differ in that Toshio does not teach the exact same range for the groove width or the ratio of the area of the groove to the total area of the cooling roll, that a cooling roll comprised of a base and a surface layer nor do the references teach a thermal expansion coefficient as recited in applicants' claim 6.

However, one of ordinary skill in the art at the time the invention was made would have been considered the invention to have been obvious because Toshio teaches a groove width and a ratio of the area of the groove to the total area of the cooling roll that overlaps the values recited in the instant claims. A prima facie case of obviousness exists when the ranges of a claimed invention overlap the ranges disclosed in the prior art *In re Geisler* 43 USPQ2d 1365 (Fed. Cir. 1997); *In re Woodruff*, 16 USPQ2d 1934 (CCPA 1976); *In re Malagari*, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05. Further, one of ordinary skill in the art would have been motivated to modify Toshio's cooling roll to a cooling roll having a base and a surface coating so as to minimize the variation in crystal grain size and make the product more uniform as taught by Fukuno. Further, the determination of an appropriate thermal expansion coefficient for the surface layer of the cooling roll is consider well within the skill of one of ordinary skill in the art.

5. Claims 1, 10 and 14 to 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett et al. (Bartlett, US Patent No. 4,865,117).

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Bartlett teaches a cooling roll for manufacturing a ribbon shaped metal alloy material wherein the cooling roll has a grooved surface (Abstract and column 1, lines 50 to 55). Bartlett teaches that the average width of the land or ridge is 0.025 to 0.635 mm (25 to 635 microns) which overlaps the average ridge width of 0.5 to 95 microns recited in applicants' claim 10. Bartlett teaches that the grooves are helical (column 3, line 20), that is, spirally wound as recited in applicants' claim 14. Bartlett appears to teach groove configurations that overlap the groove limitations recited in applicants' claims 15 and 16 (column 3, lines 38 to 55). Bartlett teaches that the ratio of the average land width to the average groove width is about 0.5 to 1.5 (column 3, lines 49 to 51) or

$$W_L/W_G = 0.5 \text{ to } 1.5$$

wherein

$W_L$  is the land width and

$W_G$  is the groove width

and

$$W_G = W_L / 0.5 \text{ to } W_L / 1.5$$

$$W_L = 0.025 \text{ to } 0.635 \text{ mm (25 to 200 } \mu\text{m)(column 3, lines 45 to 46)}$$

therefore the maximum  $W_G$  is

$$W_G = 0.635 / 0.5 = 1.27 \text{ mm or } 1270 \text{ microns}$$

and the minimum  $W_G$  is

$$W_G = 0.025 / 1.5 = 0.0167 \text{ mm or } 16.7 \text{ microns}$$

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Thus, Bartlett teaches a groove width of 16.7 to 1270 microns and a land width of 25 to 200 microns.

Bartlett does not explicitly disclose the ratio of the area of the grooves to the total area of the cooling roll, however the Examiner considers that the ratio of the groove width to the total of the groove width and land width is equivalent to the ratio of the area of the grooves to the total area of the cooling roll. Taking a sampling of groove widths and land width taught by Toshio:

Groove Width = 50 microns

Land Width = 10, 60, 80, 100 and 200 microns

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+10} = 0.83 \text{ or } 83\%$$

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+60} = 0.45 \text{ or } 45\%$$

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+80} = 0.38 \text{ or } 38\%$$

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+100} = 0.33 \text{ or } 33\%$$

$$\frac{\text{Groove Width}}{\text{Groove Width} + \text{Groove Pitch}} = \frac{50}{50+200} = 0.20 \text{ or } 20\%$$

Thus, Bartlett teaches a groove width of 16.7 to 1270 microns which overlaps the groove width of 0.5 to 90 microns recited in applicants' claim 1 and ratios of the area of

the grooves to the total area of the cooling roll that overlap the ratio of the area of the grooves to the total area of the cooling roll of 30 to 99.5% recited in applicants' claims.

The claims and Bartlett differ in that Bartlett does not teach the exact same values for the groove width and ratio of the area of the grooves to the total area of the cooling roll that overlap the ratio of the area of the grooves to the total area of the cooling roll as recited in applicants' claims.

However, one of ordinary skill in the art at the time the invention was made would have been considered the invention to have been obvious because Bartlett teaches a groove width and a ratio of the area of the groove to the total area of the cooling roll that overlaps the values recited in the instant claims. A prima facie case of obviousness exists when the ranges of a claimed invention overlap the ranges disclosed in the prior art *In re Geisler* 43 USPQ2d 1365 (Fed. Cir. 1997); *In re Woodruff*, 16 USPQ2d 1934 (CCPA 1976); *In re Malagari*, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

6. Claims 2, 3, and 5 to 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett et al. as applied to claims 1, 10 and 14 to 16 above, and further in view of Fukuno et al. (Fukuno, US Patent No. 5,665,177).

Bartlett teaches and is applied as set forth above.

Fukuno teaches a cooling roll for manufacturing a ribbon shaped metal alloy material wherein the cooling roll has a grooved surface. Fukuno teaches that to minimize variation in the crystal size of the product, that is, to make a more uniform product, the cooling roll is preferably comprised of a base and a surface layer (column 6, lines 65 to 67). Fukuno teaches that the outer surface layer on the cooling roll should

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have a thermal conductivity lower than the thermal conductivity of the cooling roll base (column 7, lines 1 to 7) as recited in applicants' claim 3. Fukuno teaches a thermal conductivity of the cooling roll outer surface that overlaps applicants' claim 5 (column 7, lines 3 to 6). Fukuno teaches a cooling roll surface layer having a thickness of 10 to 100 microns (column 7, lines 18 to 20).

The claims and Bartlett differ in that Bartlett does not teach a cooling roll comprised of a base and a surface layer nor do the references teach the thermal expansion coefficient as recited in applicants' claim 6.

However, one of ordinary skill in the art at the time the invention was made would have been motivated to modify Bartlett's cooling roll to a cooling roll having a base and a surface coating so as to minimize the variation in crystal grain size and make the product more uniform as taught by Fukuno. Further, the determination of an appropriate thermal expansion coefficient for the surface layer of the cooling roll is considered well within the skill of one of ordinary skill in the art.

### ***Double Patenting***

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 to 8, 10 and 13 to 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 to 17 of copending Application No. 09/833,806. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed cooling rolls in each of these two sets of claims overlap. Both sets of claims are directed to a cooling roll for manufacturing a ribbon-shaped magnetic material. The instant claims recite the presence of "dimple correcting means" while the claims in 09/33,806 recite the presence of "gas expelling means". However, each of these terms encompasses the presence of grooves on the cooling rolls. Accordingly, these two sets of claims are considered to overlap. In view of this overlap, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because where the claims overlap a prima facie case of obviousness exists, MPEP 2144.05.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Conclusion***

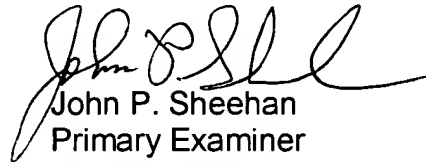
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Sheehan whose telephone number is (703)

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308-3861. The examiner can normally be reached on T-F (6:30-5:00) Second Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (703) 308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

  
John P. Sheehan  
Primary Examiner  
Art Unit 1742

jps  
June 6, 2003